



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/087,040	02/28/2002	David Miller	19930-002800	6478
20350	7590	12/17/2003	EXAMINER	
TOWNSEND AND TOWNSEND AND CREW, LLP TWO EMBARCADERO CENTER EIGHTH FLOOR SAN FRANCISCO, CA 94111-3834			DOUGHERTY, THOMAS M	
			ART UNIT	PAPER NUMBER
			2834	

DATE MAILED: 12/17/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No. 10/087,040	Applicant(s) MILLER ET AL.	
	Examiner Thomas M. Dougherty	Art Unit 2834	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 07 November 2003.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 3-10 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 3-10 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 28 February 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All   b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.  
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                  | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____  |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                         | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) <u>502</u> | 6) <input type="checkbox"/> Other: _____                                    |

## **DETAILED ACTION**

### ***Claim Objections***

Claim 1 is objected to because of the following informalities: at line 8 of the claim “exits” is used, which use is confusing. It is thought that the applicants intended to say “exists” at that place, which provides clarity. Appropriate correction is required.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 3, 4 and 6-9, are rejected under 35 U.S.C. 102(b) as being anticipated by De Los Santos et al. (US 6,040,611). De Los Santos et al. show (fig. 2): An electro-mechanical system capable of overcoming stiction forces through localized vibration (see col. 2, ll. 1-3), the system comprising: a base layer (22) having a surface; a device (28) supported above the surface by a pivot (32), wherein the device (28) is movable along a movement path; a stop (24a, 24b) located at a contact position along the movement path, wherein the device (28) contacts the stop at the contact position, and wherein a stiction force between the device (28) and the stop (24a, 24b) exists at the contact position; and a vibration element (38a, 38b, 40a, 40b) operable to cause a vibration at or near the contact position, wherein the vibration disrupts the stiction force. Again see col. 2.

The system further comprising an device actuator (also 38a, 38b, 40a, 40b), wherein the device actuator (also 38a, 38b, 40a, 40b) is operable to cause the device (28) to move along the movement path.

The stop (24a, 24b) comprises an area of the base layer (22).

The vibration element (38a, 38b, 40a, 40b) is a mechanical structure operable to repeatedly contact the device (28) at or near the contact point.

The vibration element (38a, 38b, 40a, 40b) comprises a device actuator, wherein the device actuator is operable to cause the device (28) to move relative along the movement path.

The vibration element (38a, 38b, 40a, 40b) is integral to the device. The entire device is an integral device, i.e. connected together.

Claims 3-10, are rejected under 35 U.S.C. 102(b) as being anticipated by Van Kessel et al. prior art article A MEMS-Based Projection Display. Van Kessel et al. show (fig. 5): An electro-mechanical system capable of overcoming stiction forces through localized vibration (caused by restoring spring forces), the system comprising: a base layer (not numbered, but the Yoke and Hinge) having a surface; a device (Mirror) supported above the surface by a pivot, wherein the device (mirror) is movable along a movement path; a stop (mirror address electrode) located at a contact position along the movement path, wherein the device (mirror) contacts the stop at the contact position, and wherein a stiction force between the device (mirror) and the stop (mirror address electrode) exists at the contact position; and a vibration element (spring) operable to cause a vibration at or near the contact position, wherein the vibration

Art Unit: 2834

disrupts the stiction force. See the text beginning at the last two lines of column 2 on page 1696.

The system further comprising an device actuator (also 38a, 38b, 40a, 40b), wherein the device actuator (also electrodes) is operable to cause the device (mirror) to move along the movement path.

The device (mirror) is a structural plate, that comprises a micro mirror.

The stop (electrodes) comprises an area of the base layer (Yoke and Hinge).

The vibration element (spring) is a mechanical structure operable to repeatedly contact the device (mirror) at or near the contact point. Of course this depends on how the mirror is driven.

The vibration element (electrodes) comprises a device actuator, wherein the device actuator is operable to cause the device (mirror) to move relative along the movement path.

The vibration element (electrodes) is integral to the device. The entire device is an integral device, i.e. connected together.

A plurality of these devices is shown in figure 1 such that there are the device is a first device, the pivot is a first pivot, the stop is a first stop, the contact position is a first contact position, the movement path is a first movement path, and the vibration device is a first vibration device, the system further comprising:

at least a second device and a second pivot, wherein the second device is supported above the surface by the second pivot, and wherein the second device is movable along a second movement path; at least a second stop located at a second

Art Unit: 2834

contact position along the second movement path, wherein the second device contacts the second stop at the second contact position, and wherein the contact between the second device and the second stop is susceptible to a stiction force; at least a second vibration element operable to cause a vibration at or near the second contact position, wherein the vibration disrupts the stiction force; and wherein the first and second vibration elements are electrically connected such that the first and second vibration elements are activated together. Figure 2 shows a 3x3 array of nine such elements.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over De Los Santos et al. (US 6,040,611) in view of Huibers (US 6,046,840). Given the invention of De Los Santos et al. they further show that there device (28) is a structural plate, however they do not note that it comprises a micro mirror. Huibers shows (fig. 3b) a micro mirror (28) in his invention. He doesn't show a pivot connected to a base carrying that component. It would have been obvious to one having ordinary skill in the art to employ the structure of the De Los Santos et al. invention in the micro mirror structure of Huibers, because the De Los Santos et al. invention has provision for defeating the problems of stiction as they note at col. 2, lines 1-3.

**Conclusion**

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The remaining prior art cited reads on some aspects of the claimed invention.

Direct inquiry concerning this action to Examiner Dougherty at (703) 308-1628.

*Hand*  
tmd

December 1, 2003

*Thomas M. Dougherty*